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United States Patent

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A handwritten signature in black ink, appearing to read "J. Todd Lee".

Director of the United States Patent and Trademark Office

A handwritten signature in black ink, appearing to read "Sandra L. Morton".

Attest

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United States Patent [19]

Kuriakose et al.

[11] Patent Number: 6,073,478

[45] Date of Patent: Jun. 13, 2000

[54] HYDROGEN SENSOR USING A SOLID
HYDROGEN ION CONDUCTING
ELECTROLYTE4,724,191 2/1988 Kuriakose et al.
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5,403,746 4/1995 Bentsen et al. 73/3,21
5,453,172 9/1995 Alberti et al. 204/421[75] Inventors: **Areekattuthazhayil K. Kuriakose,**
Nepean: Nicola Maffei. Ohawa. both of
Canada

FOREIGN PATENT DOCUMENTS

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Canada, as represented by the
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94/28403 of 1994 WIPOPrimary Examiner—Max Noori
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[21] Appl. No.: 09/016,391

ABSTRACT

[22] Filed: Feb. 2, 1998

A reliable gaseous hydrogen detection and measuring device which is simple, easy to use, does not require any reference gas supply, and which can be of reasonably rugged construction. The device utilizes a disc comprising a solid state ceramic hydronium conductor of the general formula $\text{Na}(\text{H}_3\text{O})\text{Zr}_2\text{Si}_x\text{P}_{(3-x)}\text{O}_{12}$ together with a silver based electrode system on one side, and a catalytic noble metal electrode, such as platinum, on the other. By measurement of the output voltage across the electrodes, both the presence, and the amount, of hydrogen in a gaseous system can be determined.

[51] Int. Cl. ⁷ G01N 27/00
[52] U.S. Cl. 73/23.4; 73/23.28
[58] Field of Search 73/23.2, 23.21,
73/23.28, 23.4

[56] References Cited

13 Claims, 4 Drawing Sheets

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